

CLAIMS:

1. An improved actuation system for positioning a slider carrying a transducing head, the actuation system of the type having a movable actuator arm, a head suspension, a microactuator, a flexure, a slider and a transducing head carried by the slider, the improvement comprising:

an encapsulant comprised of a self assembled monolayer covers exposed surfaces of a component selected from the group consisting of the microactuator, the slider, a disc spacer, surface mount components on a printed circuit card assembly, and ceramic components of the actuation system.

2. The improvement of claim 1 wherein the self assembled monolayer is composed of an organosilane.

3. The improvement of claim 2 wherein the organosilane is selected from the group consisting of octadecyltrichlorosilane (OTS), octadecyldimethylchlorosilane, butyltrichlorosilane, perfluorodecyltrichlorosilane, alkylsiloxane, alkyl and perfluoroalkyl-trichlorosilane, dichlorosilane, alkene and alkyl ethoxy silanes, octadecyltriethoxysilane, alkylaminosilanes, and alkanethiols.

4. The improvement of claim 1 wherein the self assembled monolayer is composed of N-octadecene.

5. The improvement of claim 1 wherein the encapsulant has a thickness in the range of about 10 angstroms to about 40 angstroms.

6. The improvement of claim 1 wherein the encapsulant selectively adheres to exposed ceramic surfaces of the component.

7. A slider comprising:
a slider body having a leading edge and a trailing edge;
a transducing head positioned proximate the trailing edge of the slider body; and
an encapsulant comprised of a self assembled monolayer covering exposed surfaces the slider body.
8. The slider of claim 7 wherein the self assembled monolayer is composed of an organosilane.
9. The slider of claim 8 wherein the organosilane is selected from the group consisting of octadecyltrichlorosilane (OTS), octadecyldimethylchlorosilane, butyltrichlorosilane, perfluorodecyltrichlorosilane, alkylsiloxane, alkyl and perfluoroalkyl-trichlorosilane, dichlorosilane, alkene and alkyl ethoxy silanes, octadecyltriethoxysilane, alkylaminosilanes, and alkanethiols.
10. The slider of claim 7 wherein the self assembled monolayer is composed of N-octadecene.
11. The slider of claim 7 wherein the encapsulant has a thickness in the range of about 10 angstroms to about 40 angstroms.
12. The slider of claim 7 wherein the encapsulant is substantially uniform.
13. The slider of claim 7 wherein the encapsulant selectively adheres to ceramic surfaces of the slider body.

14. The slider of claim 7 wherein the thin organic film is applied to the slider by dip coating, gravity coating, spray coating, screen coating, roll coating or vapor phase deposition.
15. A microactuator comprising:
 - a first piezoelectric element attached between a mounting block and a suspension, the first piezoelectric element being deformable in response to a voltage applied thereto;
 - an encapsulant comprised of a self assembled monolayer covering exposed surfaces of the first piezoelectric element; and
 - a compliant joint between the mounting block and the suspension, the compliant joint being flexible to permit movement of the suspension with respect to the mounting block.
16. The microactuator of claim 15 wherein the self assembled monolayer is composed of an organosilane.
17. The microactuator of claim 16 wherein the organosilane is selected from the group consisting of octadecyltrichlorosilane (OTS), octadecyldimethylchlorosilane, butyltrichlorosilane, perfluorodecyltrichlorosilane, alkylsiloxane, alkyl and perfluoroalkyl-trichlorosilane, dichlorosilane, alkene and alkyl ethoxy silanes, octadecyltriethoxysilane, alkylaminosilanes, and alkanethiols.
18. The microactuator of claim 15 wherein the self assembled monolayer is composed of N-octadecene.
19. The microactuator of claim 15 wherein the encapsulant has a thickness between about 10 angstroms and about 40 angstroms.

20. The microactuator of claim 15 wherein the encapsulant selectively adheres to exposed ceramic materials of the first piezoelectric element.

21. The microactuator of claim 15, and further comprising a second piezoelectric element attached between the mounting block and the suspension, the second piezoelectric element being covered by an encapsulant comprised of a self assembled monolayer and deformable in a direction complementary to deformation of the first piezoelectric element in response to a voltage applied thereto.